J Prev Epidemiol. 2017;2(2):e09 Original

Journal of Preventive Epidemiology DOI: 10.15171/jpe.2017.09 http jprevepi.com

The incidence of pressure ulcer in old patients undergoing open heart surgery and the relevant factors

Mojtaba Senmar, Jalil Azimian, Hossein Rafiei*, Mitra Habibollahpour, Fatemeh Yousefi

Department of Nursing, School of Nursing and Midwifery, Qazvin University of Medical Sciences, Qazvin, Iran

Correspondence to:
Hossein Rafiei, Email: Hosseinrafiei21@yahoo.com

Received: 9 April 2017
Accepted: 12 June 2017
ePublished: 16 July 2017

Keywords: Pressure ulcer, Older adults, Open heart surgery, Hemodynamic, Oxygenation

Abstract

Introduction: The proportion of old inpatients in cardiac intensive care units (CICUs) is increasing.
Objectives: This study was conducted to determine the relationship of hemodynamic and oxygenation status with the risk of pressure ulcers following open heart surgery in old patients.
Patients and Methods: The present descriptive study was conducted over three months in 2016 on 48 patients selected using convenience sampling. The data collection tools included a three-part demographic information checklist, hemodynamic clinical data collection forms, oxygenation clinical data collection forms and the Braden scale. The data collected were analyzed in SPSS using descriptive tests, the independent *t* test and Pearson's correlation coefficient.
Results: Of the 48 patients, 28 (58.3%) were male and 20 (41.7%) were female. The mean age of the patients was 68.16±5.53 years and their mean length of stay was 2.95±0.96 days. All the pressure ulcers were stage 1 and 2. The incidence of pressure ulcers in these patients was found to have statistically significant relationships with the mean heart rate on the second day ($P=0.01$), the mean arterial carbon dioxide level on the fourth day ($P=0.02$), diabetes ($P=0.01$) and smoking ($P=0.001$), while it lacked statistically significant relationships with the other hemodynamic and oxygenation variables studied.
Conclusion: Old patients undergoing open heart surgeries are at a high risk of the incidence and development of pressure ulcers. Thus, factors such as diabetes, smoking, heart rate and arterial carbon dioxide level affect the incidence of these ulcers.

Citation: Senmar M, Azimian J, Rafiei H, Habibollahpour M, Yousefi F. The incidence of pressure ulcer in old patients undergoing open heart surgery and the relevant factors. J Prev Epidemiol. 2017;2(2):e09. DOI: 10.15171/jpe.2017.09.

Introduction

Pressure ulcers are skin integrity disorders in which a soft tissue forms between bony appendages and an outer surface due to the skin compression. Ineffective tissue perfusion causes these ulcers which progressively destruct their underlying layers and consequently cause the loss of cells (1). Pressure ulcers are a cause of physical, economic and emotional pressure on patients and an indicator for investigating the quality of healthcare provided in health centers (2). These ulcers prolong hospitalization, increase healthcare costs, undermine quality of life (3) and are associated with adverse consequences including pain, reduced performance and independence, increased risk of infection and sepsis, delayed recovery and a need for additional surgeries (4).
Moreover, over one million inpatients are annually infected with pressure ulcers, around 7%-8% of whom die due to the complications of these ulcers (5). Billions of dollars are also spent every year in healthcare centers around the world to prevent and treat pressure ulcers, particularly in patients with prolonged hospitalization (2). According to a report, the cost of pressure ulcer care accounts for around 1% of the total healthcare budget of the Netherlands (6). Despite advances in modern technology and preventive equipment, unfortunately, the prevalence of pressure ulcers has not been reduced in inpatients (7).
Numerous risk factors contribute to forming and developing pressure ulcers (5), including peripheral vascular disease, infections and aging (8). Given the progressively growing population of older adults in many countries, healthcare requirements of this population seem to be growing today (9). Different studies suggest significantly positive

Core tip
Old patients undergoing open heart surgeries are at a high risk of the incidence and development of pressure ulcers. Consequently, factors such as diabetes, smoking, heart rate and arterial carbon dioxide level affect the incidence of these ulcers.